UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 63516

CSAH NO. 13

OVER THE

RED LAKE RIVER

DISTRICT 2 - RED LAKE COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 172)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge 63516, Piers 1 and 2, were in good condition with no defects of structural significance observed. A heavy accumulation of timber debris was observed at the upstream end of Pier 1. The channel bottom appeared to be in stable condition with no evidence scour around the substructure units.

INSPECTION FINDINGS:

(A) A heavy accumulation of 12-inch-diameter-and-smaller timber debris was observed at the upstream end of Pier 1 extending from the channel bottom to 3 feet above the waterline. The debris extended along the entire north face of the pier and extended from the pier to the shore.

RECOMMENDATIONS:

(A) Remove the timber debris at Pier 1 during routine maintenance to inhibit further accumulation and any adverse effects on pier or surrounding channel bottom.

(B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 63516

Feature Crossed: Red Lake River

Feature Carried: CSAH No. 13

Location: District 2 - Red Lake County

Bridge Description: The bridge superstructure consists of three spans of continuous multiple prestressed concrete beams supporting a reinforced concrete deck. The superstructure is supported by two concrete abutments and two concrete piers. The piers are numbered 1 and 2 starting from the north end of the bridge.

2. INSPECTION DATA

Professional Engineer Diver: Bradley A. Slyer, P.E., S.E.

Dive Team: John J. Loftus, Valerie Roustan

Date: August 19, 2007

Weather Conditions: Cloudy, 65ºF

Underwater Visibility: 3.0 feet

Waterway Velocity: 1.0 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: Each pier consists of an oblong rectangular shaft with rounded noses, which rests upon a rectangular footing founded on steel H-piles.

Maximum Water Depth at Substructure Inspected: Approximately 9.2 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the cap at the upstream end of Pier 1.

Water Surface: The waterline was approximately 14.3 feet below reference. Waterline Elevation = 949.8.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 8

Item 61: Channel and Channel Protection: Code 6

Item 92B: Underwater Inspection: Code B/08/07

Item 113: Scour Critical Bridges: Code F/02

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

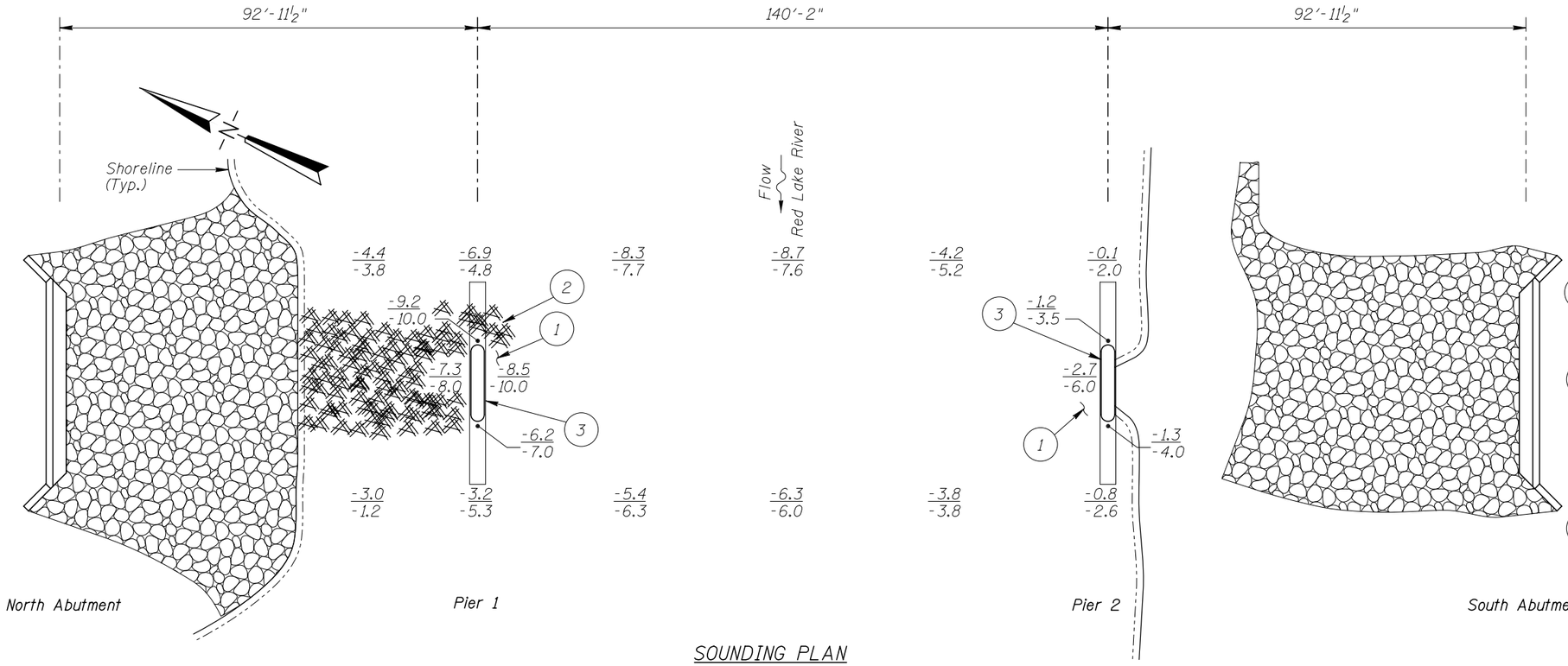
_____ Yes X No

Photograph 1. View of Structure, Looking Northeast.

Photograph 2. View of Pier 1, Looking Southwest.

Photograph 3. View of Pier 2, Looking Southwest.

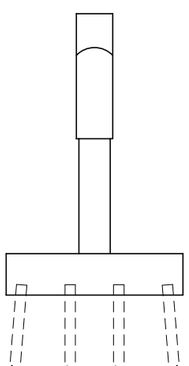
Photograph 4. View of South Abutment, Looking South.



SOUNDING PLAN

INSPECTION NOTES:

1. The channel bottom consisted of sandy silt and scattered riprap with 1 foot of probe rod penetration around the entire perimeter of both piers.
2. A heavy accumulation of 12-inch-diameter and smaller timber debris consisting of logs and branches was observed at Pier 1, extending from the channel bottom to 3 feet above the waterline, radiating out up to 10 feet from the upstream nose, and along the entire north face extending to the north shoreline.
3. The concrete above and below the waterline was typically smooth and sound with no defects of structural significance observed.



TYPICAL END VIEW OF PIERS

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on August 19, 2007 the waterline was located approximately 14.3 feet below the top of the cap at the upstream end of Pier 1. This corresponds to a waterline elevation of 949.8 based on design drawings.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

Legend

-4.0	Sounding Depth (8/19/07)
-5.2	Sounding Depth (8/27/02)
	Timber Debris
	1 to 3 Foot Diameter Riprap

Note:

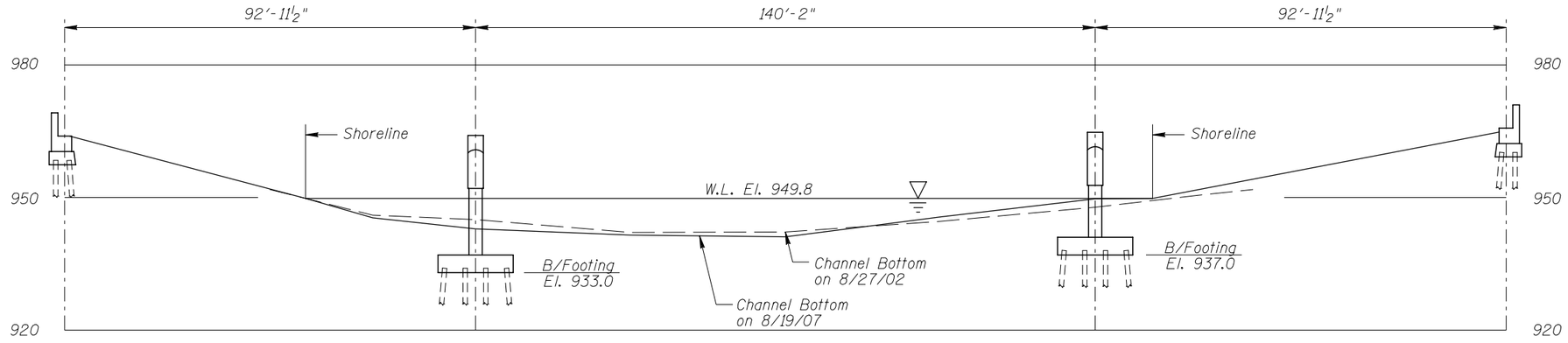
All soundings based on 2007 waterline location.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

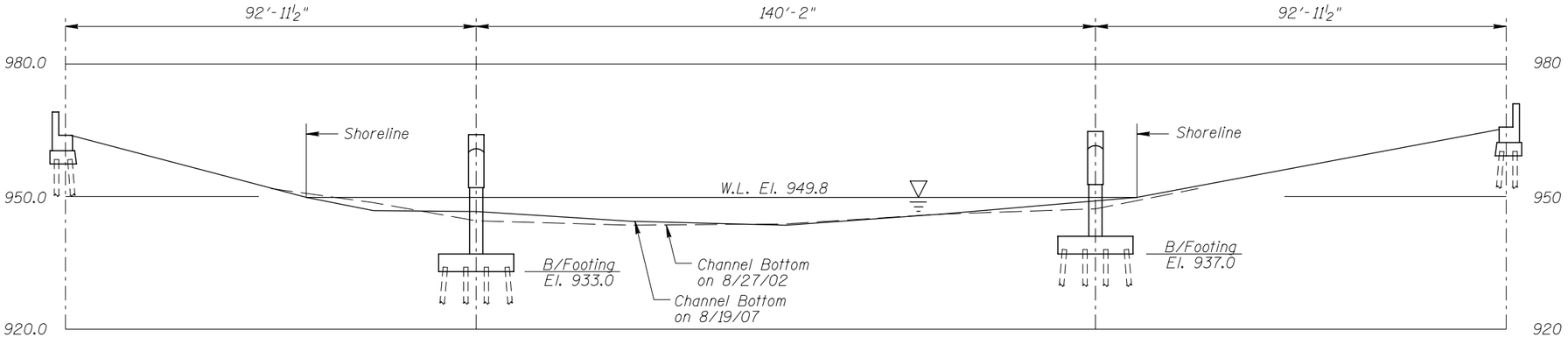
STRUCTURE NO. 63516
OVER THE RED LAKE RIVER
DISTRICT 2, RED LAKE COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC. 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: AUGUST, 2007
Checked By: MDK		Scale: NTS
Code: 522163516		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
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UPSTREAM AND DOWNSTREAM
FASCIA PROFILES

Drawn By: PRH	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, Il. 60606 (312) 704-9300 www.collinsengr.com	Date: AUGUST, 2007
Checked By: MDK		Scale: 1"=30
Code: 522163516		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: August 19, 2007

ON-SITE TEAM LEADER: Bradley A. Syler, P.E., S.E.

BRIDGE NO: 63516 WEATHER: Cloudy, 65 ºF

WATERWAY CROSSED: Red Lake River

DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR

_____ OTHER_____

PERSONNEL: John J. Loftus, Valerie Roustan

EQUIPMENT: Scuba, U/W Light, Scraper, Sounding Pole, Lead Line, Probe Rod, Camera

TIME IN WATER: 10:10 a.m

TIME OUT OF WATER: 10:50 a.m.

WATERWAY DATA: VELOCITY 1.0 f.p.s

VISIBILITY 3.0 feet

DEPTH 9.2 feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the concrete of the bridge piers was in good condition with no defects observed. A heavy accumulation of 12-inch-diameter-and-smaller timber debris was observed at the upstream end of Pier 1 and extending along the north face to the shore. The channel bottom consisted of sandy silt and scattered riprap with 1 foot of probe rod penetration.

FURTHER ACTION NEEDED: _____ YES X NO

Remove the timber debris at Pier 1 during routine maintenance to inhibit further accumulation and any adverse effects on pier or surrounding channel bottom.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 63516
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Bradley A. Syler, P.E., S.E.
WATERWAY CROSSED Red Lake River

INSPECTION DATE August 19. 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER (BRACING)	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	9.2’	N	8	N	9	N	8	8	8	8	6	6	8	N	N	N	N	N
	Pier 2	2.7’	N	8	N	9	N	8	8	8	8	N	8	8	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete of the bridge piers was in good condition with no defects observed. A heavy accumulation of 12-inch-diameter-and-smaller timber debris was observed at the upstream end of Pier 1 and extending along the north face to the shore. The channel bottom consisted of sandy silt and scattered riprap with 1 foot of probe rod penetration.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.